

Lobster Research Program
Maine Department of Marine Resources

Examination of Recent Changes in Jonah Crab
(Cancer borealis) Abundance and Harvesting Practices

by
Jay S. Krouse

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Despite an apparent reduction in the commercial landings of the two species of Cancer crab harvested along the Maine coast over the last few years, the price has continued to steadily rise (Figure 1)¹. Subsequently, many lobstermen have been selling their incidental crab catches to offset increasing operational costs (bait, fuel, etc.). An analysis of the Maine crab industry by DMR (Cowger 1978) in the mid-1970s showed that almost 90% of the commercial catch was comprised of rock crab (Cancer irroratus), while the generally larger but less abundant Jonah crab (C. borealis) rounded out the balance of the catch (Figure 2)². Also, the majority of landed crabs are picked out by hand while some crabs are sold (retailed) whole, either live, cooked, or frozen. These characteristics of the crab catch and industry may be changing today as the result of apparent increases in Jonah crab abundance during the last few years.

Recently, fishermen and dealers have informed DMR of the decidedly higher abundance levels of Jonah crab. Fishermen report catching large numbers of these crabs today in areas where years ago the very same crabs were scarce. Moreover, fishermen often find it necessary to frequently

¹Maine landing values for crabs are suspect because many crabs (possibly as high as 50% of the total reported catch) are processed by home pickers and never reported (Cowger 1978).

²Most Maine fishermen refer to the Jonah crab as the rock crab because of this species preference for hard, rocky bottoms as opposed to the rock crab (C. irroratus) which is usually associated with soft mud substrates.

relocate their gear to minimize Jonah crab catches in favor of the more valuable lobster. In view of this information provided by the industry, it does seem as though Jonah crabs are indeed more numerous today rather than just an artificial population explosion created by fishermen fishing new bottom where crabs had not been previously exploited. Similarly, according to Canadian biologists, recent harvest levels of Jonah crabs have increased in Canada.

As a result of this greater supply of Jonah crab, some dealers have discovered a profitable market for cooked, frozen claws. Because many of these dealers do not employ crab pickers, the fishermen are encouraged to only land claws. In turn, fishermen have been removing claws and returning the clawless crab to the sea to experience a very questionable fate. Needless to say, DMR is very concerned about this practice, which although limited today, may become more common in the future. Hopefully, DMR might have the necessary resources (money and manpower) in the near future to evaluate this situation by examining such things as claw regeneration and mortality caused by claw removal. Similar concerns have been expressed by Florida biologists for the stone crab, Menippe mercenaria, whose claws can only be harvested (must exceed a minimum size); thus requiring detachment at sea. Besides the fact that improperly removed claws often cause crabs to bleed to death as emphasized by Florida scientists (Savage et al. 1975), the contribution of regenerative claws is unknown - in other words, from a conservation point of view, it might be in the best interest of both the resource and industry to require harvesting of the entire crab. In any event, DMR tentatively plans to assess this situation.

In spite of the conservation aspects of claw removal, a comparative cost analysis of this current practice might be useful. Accordingly, DMR recently inspected the Jonah crab catch of a Boothbay Region fisherman to evaluate the price differential paid for claws and whole crabs. In other words, what must the price of claws be to equal the value of whole crab? To make this determination, we recorded both whole crab and claw weight along with shell size (carapace width) for each of 135 crabs in the catch. We used these measurements to describe the relations of claw weight versus carapace width and claw weight versus total weight (Figure 3).

Looking at Figure 3, the values taken from the line representing the relationship of claw weight to total weight reveal that a pair of claws by weight comprise about 30% (26-31% of total weight) of the crab's total weight. Therefore, for the unit price of claws and whole crabs to be equivalent, the claw price must be 3.33 times greater than the whole weight price.

For example, using the ex-vessel prices of whole Jonah crabs (\$.20/pound) and claws (\$.45/pound) paid in the Boothbay Region during 1982, to equate these two prices multiply \$.20 by 3.33 (adjustment factor) which equals \$.67/pound, the equivalent price of claws. Thus, if a fisherman landed 100 pounds (live weight) of crabs, he would receive \$20 or if he elected to only land claws [.30 (% of claw weight to total weight) x 100 pounds = 30 pounds of claws] at \$.67/pound, the value would be \$20.01.

With an understanding of these price comparisons, along with other considerations such as market location, available vessel space (claws occupy much less space), etc., fishermen can now select the selling option (claws or whole crabs) best suited to their situation.

Literature Cited

- Cowger, J.D. 1978. An analysis of the Maine crab industry. Maine Dept. Mar. Resour. Res. Ref. Doc. 78/7:39 p.
- Savage, T., J.R. Sullivan, and E.E. Kalman. 1975. An analysis of stone crab (Menippe mercenaria) landings on Florida's west coast, with a brief synopsis of the fishery. Fla. Dept. Nat. Resour. Res. Doc. 13:37 p.

JONAH CRAB
(Cancer borealis)

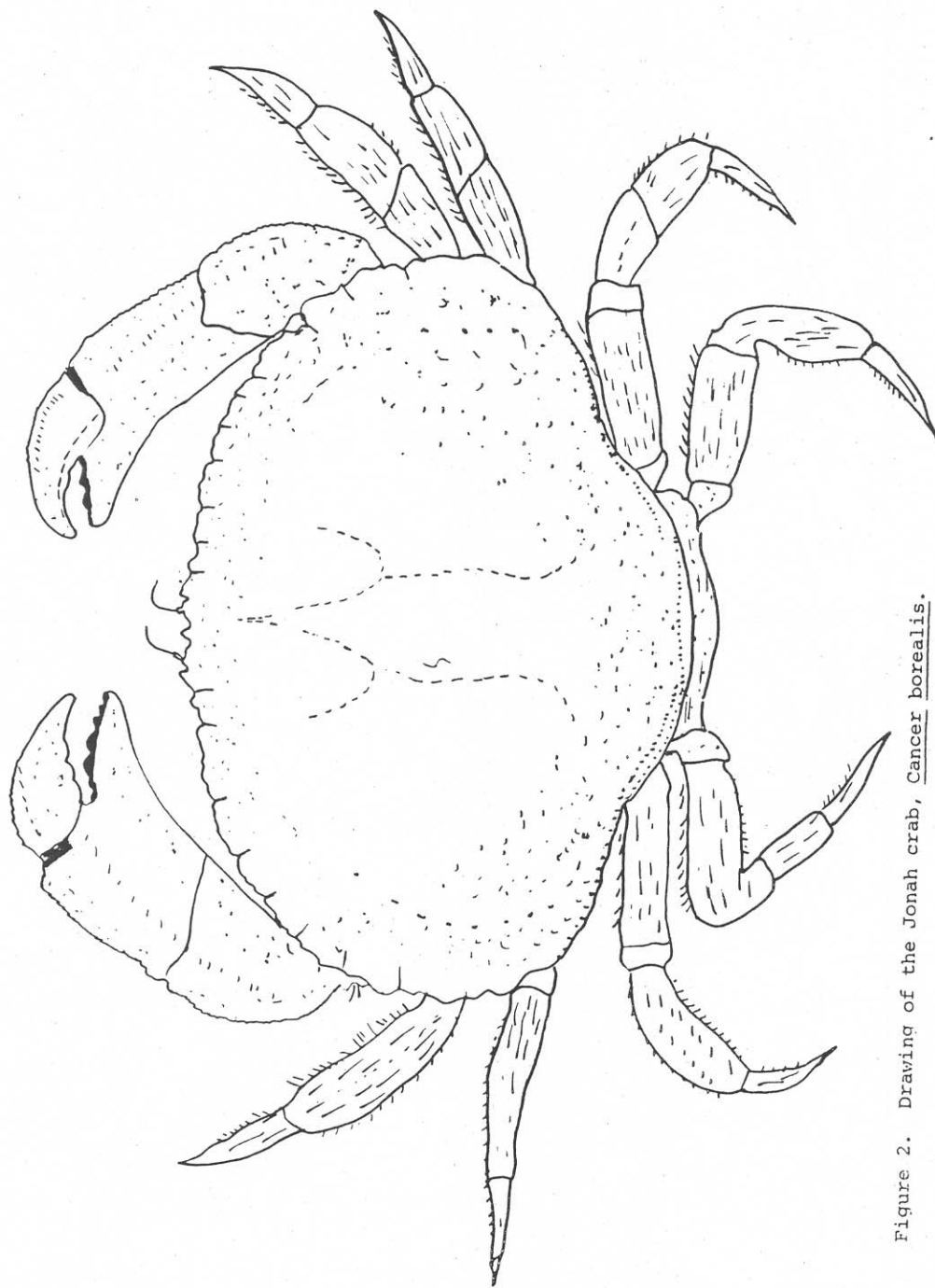


Figure 2. Drawing of the Jonah crab, Cancer borealis.

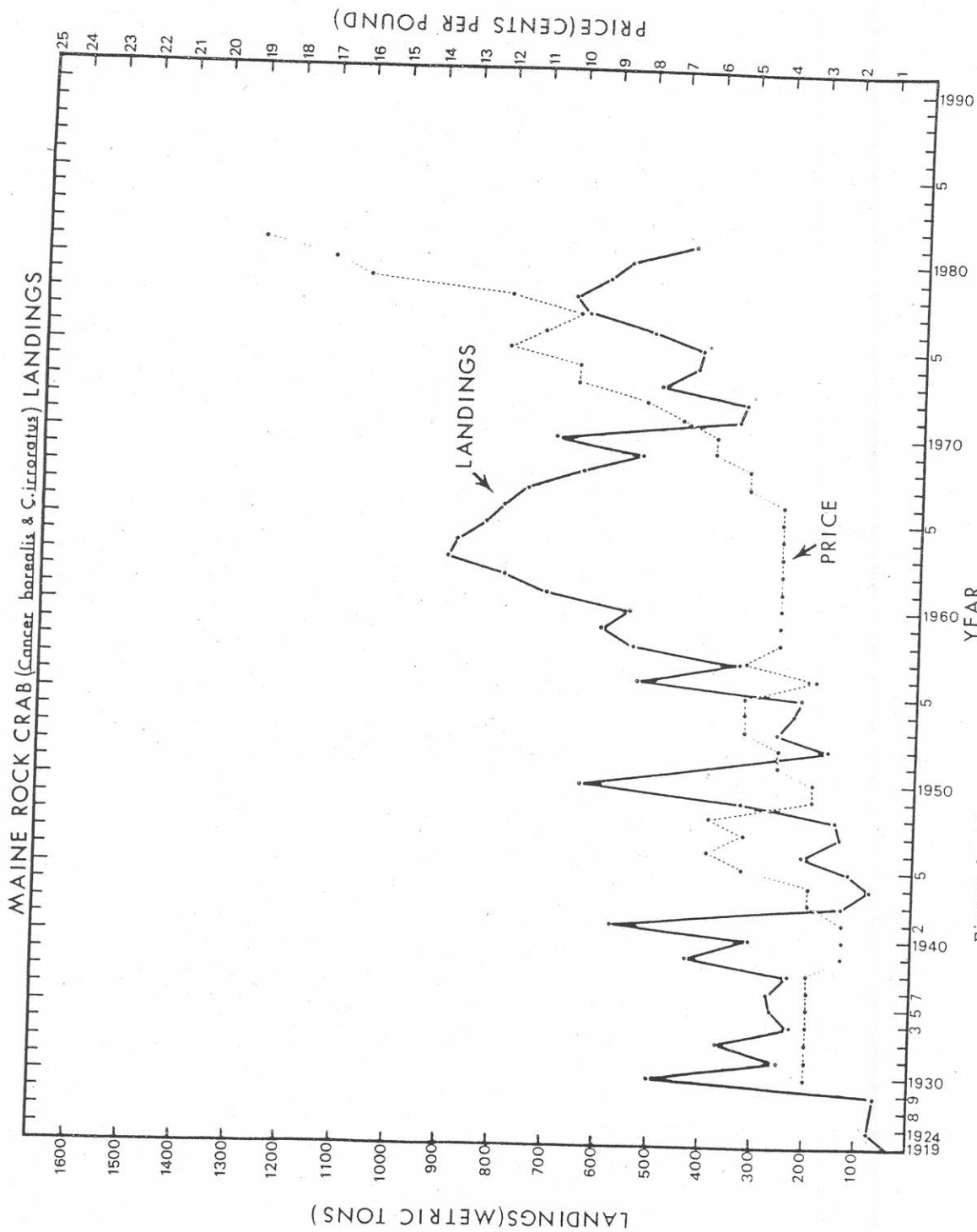


Figure 1. Ex-vessel prices and landings of Cancer crabs harvested in Maine from 1919 through 1981.

Jonah Crab :- Claw Weight vs Total Weight And Carapace Width Relations

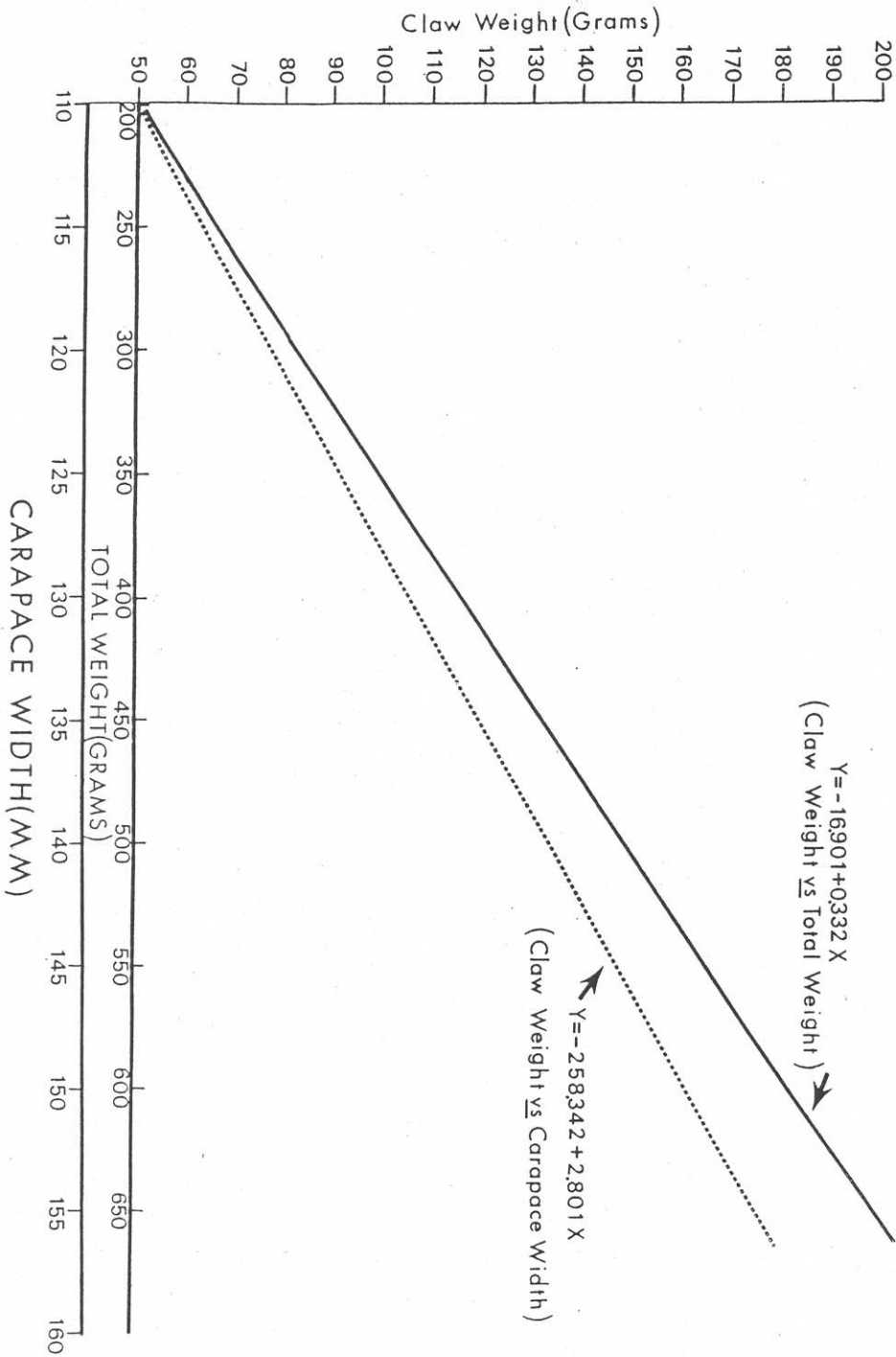


Figure 3. Relationships of Jonah crab claw weight to whole weight and carapace width.